

started off again in June, 1902, this time to East Africa in the hope of there finding a locality with physical conditions more favourable to the prosecution of his research. Finding, however, that conditions were less rather than more favourable, Mr. Budgett returned down the Nile to England. In June, 1903, he started again for West Africa, and took up his quarters at a point in the Niger delta where he knew *Polypterus* to be abundant. Here at last he succeeded, by means of artificial fertilisation, in obtaining a fine series of the long wished for eggs and larvæ. He returned to England and settled down to work out his material in the laboratory of his friend and teacher, Mr. Adam Sedgwick, and there he was at work on that fateful Saturday when there came to him the first premonition of impending illness.

Budgett's personality had a peculiar charm. Unassuming, modest to a fault, his diffidence at times brought him moods of severe depression. Latterly, however, he had been cheered and encouraged by the appreciation of his work by those to whom he most looked up.

He was a zoologist of the best type. He was a keen and accomplished observer in the field, and always recognised to the full that the first and main interest in an animal lies in the fact that it is an organism which *lives*. But in addition he was a most accomplished laboratory investigator. With great interest in laboratory technique he combined tireless patience in research and almost fastidious accuracy. His artistic powers were shown in the charming sketches which he brought back from his various expeditions, and they are again apparent in the beautiful preparations with which he enriched the museum at Cambridge.

He has gone, but he has left behind an enduring memorial in the work he has done and in the affectionate memories which will be treasured by his many friends.

NOTES.

LORD RAYLEIGH has been created a foreign Knight of the Prussian Order Pour le Mérite for sciences and arts by the German Emperor.

THE remains of James Smithson, the Englishman who founded the Smithsonian Institution in Washington, reached New York on January 20, having been conveyed from Genoa in the *Prinzessin Irene*. The United States despatch-boat *Dolphin* awaited the arrival of the vessel in order to act as an escort of honour from the lower bay to the city. Smithson's remains were taken to Washington in the *Dolphin*; and on January 25 the transfer of the coffin, draped with the American and British flags, was witnessed by Sir Mortimer Durand, the British Ambassador, Mr. Loomis, Acting Secretary of State, and a number of members of the Senate and House of Representatives. Escorted by a troop of cavalry and a marine band, the remains were conveyed to the Smithsonian Institution, where a suitable tomb will be erected.

PROF. WEISMANN'S seventieth birthday was celebrated in Freiburg on January 17, when a large and representative gathering assembled to do him honour. A bust by Kowazik, of Frankfort, had been subscribed for by biologists in various parts of the world, and was presented in the name of the subscribers by Prof. H. E. Ziegler, of Jena; it is to be placed in the zoological institute of the university. A special number of the *Zoologische Jahrbücher*, containing papers by various naturalists, was presented by Prof. Spengel, of Giessen, and from the Grand

Duke of Baden Prof. Weismann received the highest order conferable, that of the Cross and Star of Bertold I. To all interested in the advance of biological science, and more especially to those who know him also as a man of wide culture and high ideals, it will be a satisfaction to learn that Weismann retains unabated his freshness, vigour, and untiring energy.

THE President of the Board of Trade has appointed a committee to inquire and report as to the statutory requirements relating to the illuminating power and purity of gas supplied by the metropolitan gas companies, and as to the methods now adopted for testing the same, and whether any alteration is desirable in such requirements or methods, and, if so, whether any consequential alteration should be made in the standard price of gas. The members of the committee are:—Lord Rayleigh, F.R.S. (chairman), Sir William de W. Abney, K.C.B., F.R.S., Dr. Robert Farquharson, M.P., Mr. William King, and Mr. J. Fletcher Moulton, M.P. Mr. Herbert C. Honey, of the Board of Trade, has been appointed secretary to the committee.

WE regret to announce that the Rev. Dr. Salmon, F.R.S., Provost of Trinity College, Dublin, since 1888, died on Friday last at eighty-four years of age.

MR. F. E. BEDDARD, F.R.S., has been elected a corresponding member of the *Königliche Böhmisches Gesellschaft de. Wissenschaften*.

A REUTER message from New York on January 22 states that the University of California has been informed of the discovery of remarkably fine remains of an ichthyosaurus in Chile.

A DESPATCH from Buenos Ayres announces that the *Français*, with Dr. Charcot's Antarctic Expedition on board, reached Ushuaia, Patagonia, on January 15, and left for the south after coaling.

DR. LORENZO CAMERANO, of the Royal Zoological Museum, Turin, Dr. Fritz Sarasin, and Dr. Paul B. Sarasin, of Basel, have been elected foreign members of the Zoological Society of London.

A PREHISTORIC Society of France has just been founded at Paris with the object of studying questions of palæo-ethnology. The president for 1904 is M. Émile Rivière, and the monthly meetings are held at 93 Boulevard Saint-Germain.

MR. W. SAVILLE-KENT has been engaged to investigate and advise towards the further development of the pearl, shell and other fisheries pertaining to certain Polynesian Island properties, and will leave England in a few weeks' time to take up his new appointment.

THE death is announced of Prof. Georg Wagner, professor of chemistry in the polytechnic at Warsaw, aged fifty-four.

THE Guy medal of the Royal Statistical Society has been presented to M. Yves Guyot for his paper on "The Sugar Industry on the Continent."

THE St. Petersburg Physico-Chemical Society has projected a new Arctic expedition to be undertaken for the following objects:—observations of solar radiation and atmospheric refraction, of cloud movements, and of atmospheric electricity in connection with the extinction of ultraviolet light; determination of the phenomena of terrestrial magnetism and of electric currents in the ocean; chemical analyses of the composition of the air and water; and examinations of the polar ice.

WE regret to see the announcement of the death of Dr. William Francis, which occurred early last week. Dr. Francis was in his eighty-seventh year, and had been in failing health but a short time. He was almost the oldest, if not the oldest, fellow of the Chemical Society, and was joint editor of the *Annals and Magazine of Natural History* and of the *Philosophical Magazine*. In the latter capacities he came in contact with most of the eminent scientific men of the nineteenth century.

To commemorate the twenty-fifth anniversary of the introduction and commercial development of the incandescent lamp, the friends and associates of Mr. Thomas A. Edison have taken steps to found a medal which will be entrusted to the American Institute of Electrical Engineers. It is proposed to present the medal fund at the annual dinner of the institute on February 11, which is Mr. Edison's birthday.

It is reported from St. Petersburg that on January 16 Dr. Turchinowitch, director of the laboratory for the preparation of plague remedies at the Imperial Institute of Experimental Medicine, was taken ill after having been engaged in experimenting with bubonic plague cultures, and died of plague on January 20. It has been established that two assistant physicians who were working with Dr. Turchinowitch have also acquired the disease.

ON Thursday next, February 4, Mr. A. D. Hall will deliver the first of three lectures at the Royal Institution on "Recent Research in Agriculture." On Saturday, February 6, Mr. C. Waldstein will lecture on "The Study of Style in Greek Sculpture," and on February 13 his subject will be "Culture and Sculpture." On Saturday, February 20, Lord Rayleigh will begin his course of six lectures on "The Life and Work of Stokes." The Friday evening discourse on February 19 will be delivered by Mr. C. T. R. Wilson on "Condensation Nuclei."

THE Tanganyika Committee (Prof. Ray Lankester, Sir John Kirk, Sir W. Thiselton-Dyer, Mr. Boulenger, and Dr. Sclater) has determined to send out another naturalist for the further investigation of the "Tanganyika problem," and has selected Mr. W. A. Cunningham, of Christ's College, Cambridge, for this purpose. Mr. Cunningham will leave for Tanganyika (*via* Chinde and Zomba) in March, and will pay special attention to the lacustrine flora of the lake, of which, as yet, little is known, but will not neglect other subjects relating to the lake-basin.

A SCIENTIFIC expedition for the exploration of northern Nigeria, conducted by Lieut. Boyd Alexander and Captain G. B. Gosling, of the Rifle Brigade, is in preparation, and will shortly leave England. Lieut. Claud Alexander, who holds the diploma of the Royal Geographical Society, will act as surveyor and map-maker. The party will proceed up the Niger and Benué, and establish a station somewhere in the central hill-country of northern Nigeria, where collections of natural history will be made, and the surrounding country explored and mapped. Lieut. Boyd Alexander, who has already had much experience in African travel on the Zambezi, in the Gold Coast Colony, and in Fernando Po, is a thoroughly competent man, and has obtained the sanction of the War Office to his expedition.

WE regret to see announced the death of Mr. Walter G. Doggett, the naturalist of the Anglo-German Boundary Commission under Major Delmé Radcliffe, who has lost his life while crossing the Kagera River in Uganda. Mr. Doggett, who was the son of a well-known taxidermist at

Cambridge, served on Sir Harry Johnston's staff as naturalist and photographer both in Nyasaland and in Uganda, and will be found frequently mentioned in Sir Harry's work on the latter country. Doggett made the ascent of Ruwenzori in the Special Commissioner's company, and amongst many other objects, obtained there specimens of a remarkable new bramble which has been named after him *Rubus Doggetti*. He was the first person to discover the existence of the shoe-bill (*Balaeniceps rex*) on the shores of Lake Victoria.

It appears from a telegram dated Yakutsk, January 15, and communicated to the Russian Press, that on that date the boatswain Byegacheff, one of the members of Lieut. Kolchak's Expedition which was sent out in search of Baron Toll, returned to Yakutsk. The expedition did not find the Arctic traveller either in the New Siberia Islands or in Bennett Land. It only found in the latter place some papers left by Baron Toll stating that he was leaving Bennett Land on November 8, 1902, and going southwards. He consequently expected to reach the mainland of Siberia somewhere near Nizhne-Kolymsk, but as nothing was heard of Baron Toll during last summer, one cannot but entertain the gravest apprehensions as to his position. Lieut. Kolchak is expected soon to reach Yakutsk, as well as the other search party under Brusneff, so that we shall probably have more detailed news in a few days.

THE Royal Society catalogue of scientific papers from 1884 to 1900, completing the century, is making progress. It appears that 111,000 titles have already been prepared by the referees in the various subjects, while 68 serials containing more than 91,000 titles have been completely dealt with for both the authors' catalogue and the subject index. It is part of the scheme to make a single subject index for the whole of the nineteenth century; nearly 82,000 of the 400,000 papers dealt with in the existing catalogue have now been classified for this index. The index will be in seventeen sections, published separately, each section containing, in one or more octavo volumes, a single science indexed according to the schedules of the international catalogue; when published, these volumes cannot fail to be of great use to workers in science. The committee of the Royal Society is making strenuous efforts to expedite the work. Its chief difficulty has been in obtaining a sufficient staff of experts, and attention is invited to its advertisement asking for additional helpers.

THE annual general meeting of the Iron and Steel Institute will be held on Thursday and Friday, May 5 and 6. The council will shortly proceed to award Carnegie research scholarships, and candidates must apply before February 29. The awards will be announced at the general meeting. In accordance with previous announcements, the autumn meeting will take place in New York on October 24-26. After the meeting there will be an excursion to Philadelphia, Washington, Pittsburg, Cleveland, Niagara Falls, and Buffalo, returning to New York on November 10. An influential committee has been formed in the United States for the reception of the institute, Mr. Charles Kirchhoff being the president and Mr. Theodore Dwight the hon. secretary.

As the result of a meeting held in London several months ago, a society has been formed for the promotion of scientific studies in sociology. It is hoped that when the Sociological Society becomes adequately organised it will materially help to fill a serious gap in the cultural apparatus for national education and research. One of the founders of the society has given 1000l. towards the endowment of

sociological teaching in London University. With that exception there is at present no provision in British universities for studies specifically sociological. This country is also alone among leading nations in having neither a journal of sociological studies nor a special library of sociological literature. In addition to directing attention to these national deficiencies, the Sociological Society is making particular efforts to organise a reference library of sociology and to establish a journal of sociology. Particulars referring to the society's origin, purpose and programme may be obtained by application to the secretary, 5 Old Queen Street, Westminster, S.W.

EARLY in September, 1900, Galveston was devastated by a storm and a great wave which overwhelmed the bank on which the city is built. To prevent the recurrence of this disaster, the whole city—buildings, streets, boulevards, parks, theatres, residences and quays—in fact, everything now resting on the present ground level, are, says *Transport*, to be lifted up 17 feet in the air, and the space between the old and the new levels will be filled in, so that the city will be actually that number of feet higher than it is at present. The cost of this undertaking is estimated to be some three and a half million dollars, and the contract for lifting the city has been awarded to Messrs. Goodhart Brothers, of New York City, in cooperation with Mr. Lindon W. Bates, the engineer who devised the scheme for making Galveston flood-proof.

THE Autocopyist Company has sent us one of its "Black Boxes." This is really a form of small portable changing bag, and should be found useful to every photographer, whether amateur or professional, whilst travelling. The term "box" is rather a misnomer, for it is really not a box at all. The black cloth, forming the dark space, is very ingeniously made to fold up or out by means of two sets of wire frames after the principle of an umbrella, the lower portion having a larger circumference than the upper; when expanded the whole arrangement is placed on a bench or table and is ready for use. There are two sleeves for the insertion of the arms and one for the head, all of which have elastic extremities to fit tight to keep out the light. There is also a small window covered with red cloth, and a separate celluloid red sheet to place over this window. Altogether this portable dark room looks as if it would prove very serviceable, for it is well made, light, and closes up into a small compass.

THE Deutsche Seewarte (Hamburg) has recently made an addition to its useful contributions to maritime meteorology by the publication of a quarterly pilot chart for the North Sea and Baltic. The first issue is for the present winter, and every available space is occupied by valuable information for navigators and others. The mean frequency of wind direction for various parts of the different coasts is shown by wind-stars giving percentages of the observations by lines radiating from a central circle in which is shown the number of calms; the percentage of wind direction for any point of the compass can be easily measured from a given scale. The mean tracks of storms are laid down in the usual way, together with the average minima of barometric pressure. Three subsidiary charts show (1) the mean isobars and prevalent wind direction; (2) the average air temperature; (3) the mean temperature of the sea surface and average prevalence of fog. The reverse side of the chart is occupied by a series of maps showing the tidal currents on the coasts of the British Islands and north-west Europe for each hour

following the flood and ebb tides at Dover. In addition to the data exhibited by the charts, the text contains much useful information relating to the prevalence of storms, ice and other matters.

THE Meteorological Office Atlantic pilot chart for February contains an interesting article by Dr. Shaw on "Buys Ballot's Law and Trajectories of Air." Several diagrams are given representing the air movements during the passage across our islands of two cyclonic systems, that of November 12-13, 1901, moving at the rate of 15 miles an hour, attended by hard gales and heavy rain, and that of March 24-25, 1902, moving at the rate of 25 miles an hour, attended by strong winds and gales and but little rain. The circumstances in the two cases differ also in the general disposition of atmospheric pressure and the behaviour of the barometer in the surrounding regions. There is, consequently, a wide divergence in the air trajectories of the two systems. From a consideration of the facts presented we are "led to associate changes of surface velocity with exchange of air between the surface and the upper regions, unless they can be accounted for by alterations of area. Exchanges between the surface and the upper air are connected with temperature change and generally also with rainfall, and thus the vicissitudes of the air along its trajectories may have a very close connection with the special character of the weather changes associated with the passage of depressions." To the mariner the questions raised are of more than passing interest, for the article touches upon the question of ascending and descending air currents, which can be established or verified by the effects produced upon meteorological instruments or upon the surface of the sea. Every sailor has observed how the wind in some storms beats down the sea, while in others it raises a tumultuous sea. There is reason to suppose that in the former case the wind is a descending current, in the latter an ascending current. It is to be hoped that officers will supply careful notes on these different characteristics of wind and sea, as the subject is one of great importance from a meteorological point of view, and up to the present has not been investigated.

An interesting paper on a familiar subject, the relation of temperature to the keeping property of milk, has reached us from Storrs, Connecticut. The view of the writer, Mr. H. W. Conn, the well-known dairy bacteriologist, is that the keeping of milk is more a matter of temperature than of cleanliness. He points out that at 50° F. milk may not curdle for two weeks, whereas at 70° F. it may keep but forty-eight hours, and at 95° F. but eighteen hours. This curdling is due to the action of bacteria, and the effect of temperature on their multiplication is surprising. Thus at 50° the ordinary milk organisms increase about 5-fold in twenty-four hours, but at 70° they may multiply 750-fold in the same time. The optimum temperature for different species varies considerably. At 70° the ordinary *B. lactis acidii* develops rapidly, while at 95° the undesirable lactic ferment *B. lactis aerogenes* develops quickly and the ordinary form does not. At 50° neither of the lactic ferments makes much growth, but putrefactive bacteria develop, and though these may not make the milk sour, they make it unwholesome. Milk which has been kept sweet by exposure to low temperatures should be viewed with suspicion.

THE fourth report of the Royal Commission on Sewage Disposal, which has just been published, deals with the pollution of tidal waters, with special reference to contamination of shell-fish. The Commissioners state that they are satisfied that a considerable number of cases of

enteric fever and other illness are caused by the consumption of shell-fish which have been exposed to sewage contamination. Of the remedies suggested, the opinion is expressed that no general enactment as to the treatment of sewage before its discharge into tidal waters or as to the seizure of unwholesome food would meet the necessities of the case, but that the remedy must be sought in connection with the waters, foreshores, pits, ponds, and layings themselves. It is considered that the only way in which the evil can be effectively dealt with is by placing tidal waters under the jurisdiction of some competent authority, and conferring on that authority power to prevent the taking of shell-fish for human consumption from any position in which they are liable to risk of dangerous contamination, and to enforce restrictions as regards pollution and as regards the waters, beds, &c., in which shell-fish are fattened or stored. At the end of the report several pages are devoted to a consideration of the bacteriological methods employed in the examination of shell-fish. It is stated that Dr. Houston, the bacteriologist to the Commission, has examined more than 1000 oysters, some taken from the purest waters in the country, and has found that nearly all, from whatever laying, contain the *Bacillus coli*. Doubt is therefore raised as to the value that may attach to the *B. coli* test, and it is considered that further research is necessary in order to establish a bacteriological standard of purity.

In the December issue of the *Proceedings* of the American Academy (vol. xxxix., No. 10) Mr. F. C. Carlton records the results of experiments with regard to the cause and nature of the periodical colour-change in the skin of the Florida chamæleon-iguana (*Anolis carolinensis*). The extreme variations in the colour of this lizard are dark brown and pea-green, the former (in captive specimens at any rate) assumed in daylight and the latter at night. The brown condition is produced by the migration of pigment-granules from the centre to the terminal branches and processes of the "melanophores," the green stage, which is one of rest, being the result of the withdrawal of the same granules to the centre of the latter bodies. In three fundamental points the colour-change differs from that of the true chamæleons.

THE November (1903) issue of the *American Naturalist* contains the second of the series of articles on the adaptations of mammals to particular modes of life, the present section, by Mr. L. I. Dublin, dealing with arboreal types. With the exception of the Monotremata, all the terrestrial orders have arboreal representatives, the number of such forms being greatest in the Chiroptera (where all adopt this mode of life) and Primates, and least in the Ungulata, where there are only the tree-hyraxes. Arboreal mammals may be divided into two main groups, in the first of which terrestrial progression is retained in a greater or less degree, while in the second it is wholly lost. Among the modifications for this kind of life, in addition to those of the feet and tail, the author specially notices the frequent increase of the number of the vertebrae, and the development of dermal spines and scales, as in the Anomaluridae and Gymnura, which aid in climbing. The inclusion of the latter genus among arboreal mammals appears to indicate some new information in the possession of the author.

THE *Journal* of the Royal Statistical Society for December 31, 1903, contains an important paper on the metric system by Mr. Alexander Siemens, together with a report of the discussion. It is illustrated by tables show-

ing the trade of metrical and non-metrical countries for the year 1900, that year marking a culminating point in most countries. Mr. Siemens puts forward powerful arguments in favour of adopting the metric system, and concludes by saying that "it is quite certain that the action of Great Britain in this matter would immediately be followed by Greater Britain, the United States, and Russia, so that international unity of weights and measures would become an accomplished fact for which James Watt started his agitation 120 years ago."

WE have received the "Naturalist's Directory" for 1904-5 from Mr. L. Upcott Gill, by whom the annual is published. It gives the names and addresses of naturalists, natural history agents, societies, field clubs and museums of the British Isles, and the information has been corrected to the present date.

DR. A. LAWRENCE ROTCH writes to correct the following mistakes made by him in his letter on "The Unusual Sky Colours and the Atmospheric Circulation," published in *NATURE* of December 24, 1903 (p. 173). In the first paragraph, line twenty-four, for "southern" read "northern," and in the second paragraph, line eight, for "unlike" read "like."

THE new edition of Hazell's "Annual"—that for 1904—is the nineteenth issue of this valuable book of reference. As usual, the alphabetical arrangement is adopted, but this year many of the separate entries of former years have been collected in the form of more complete articles. Thus the information given respecting scientific societies and the advances made in various branches of scientific knowledge during 1903 is brought together in a convenient manner in some thirteen successive pages. A complete index much assists reference to the large amount of statistical and other information given in the volume.

THE Natural History Society of Northumberland, Durham, and Newcastle-upon-Tyne, held a conversazione on January 19 at the Hancock Museum, Newcastle-upon-Tyne. Experimental and lantern demonstrations in a variety of subjects were given during the evening. These and the exhibitions included:—the inactive atmospheric gases; their spectra and some of the apparatus used in determining their physical properties, by Sir William Ramsay; objects illustrating certain properties of the emanations of radium, by Sir William Crookes; the bactericidal emanations from radium, by Mr. Henry Crookes; models of turbine machinery from the Parsons' Marine Steam Turbine Co., Ltd., and many others. The meeting was an excellent indication of the interest in scientific research which exists in this northern district.

IN the *Sitzungsberichte* of the Vienna Academy of Sciences Dr. Langstein gives an account of his researches on the carbohydrates of serum-globulin. The experiments establish the fact that *d*-glucose is one of the primary decomposition products of blood-globulin, and the existence of a close relationship between albumen and glycogen is shown. Reference is made to the possible connection between the observed facts and the abnormal physiological processes taking place in cases of diabetes.

IN a paper entitled "An Enquiry into the Working of Various Water-softeners," read before the Institution of Mechanical Engineers on December 18, 1903, Messrs. Stromeier and Baron describe and illustrate by means of diagrams seventeen continuous water-softeners. Analyses

of the unsoftened and softened waters are given which permit of a fair comparison being made as to the suitability of the various types for special purposes. Of the seventeen softeners, fourteen are fitted with filters, two of them having sand filters, and the others woodwool, or sponge filters.

WE have received vol. ii. of the *Transactions* of the North Staffordshire Ceramic Society. The Society has a membership of thirty, and seven papers have been read before the members during the session. Of special interest is a paper by Messrs. Hopwood and Jackson on the nature and origin of the abnormal red, blue and black colorations of fire-clay ware. The red colorations are found to be due to the conversion of the iron in the clay substance into free ferric oxide, the black principally to free carbon, whilst the external vitreous blue films of blue-fired clay-ware are found to consist of a basic ferrous silicate.

THE much debated question regarding the dual nature of chromium solutions as manifested in the green and violet colour is again discussed by Messrs. Richards and Bonnet in a recent number of the *Proceedings* of the American Academy. The authors' experiments and previous observations seem to be most easily explainable on the assumption that the violet solutions of, say, chromium sulphate contain the salt in a state comparable to that of other normal salts, whilst the green solutions are due to hydrolysis resulting in the production of free acid and one or more complex basic salts.

IN the quarterly statement of the Palestine Exploration Fund Mr. W. Ackroyd discusses the cause of the saltiness of the Dead Sea. Facts are brought forward which seem to indicate that the saltiness cannot be entirely due to accumulation of chlorides derived from the Palestine rocks by solvent denudation or the cutting off of an arm of the Red Sea by the rising of Palestine in past ages followed by evaporation of the solution. The author brings evidence forward in favour of a third cause, which is perhaps more important than either, viz. the atmospheric transportation of salt from the Mediterranean.

A THIRD revised edition of part ii. of "Machine Design," by Prof. Forrest R. Jones, of Cornell University, has been published in this country by Messrs. Chapman and Hall. This part of the work deals with the form, strength, and proportions of parts, and the new issue has been increased by about eighty pages of new matter.

THE additions to the Zoological Society's Gardens during the past week include a Vervet Monkey (*Cercopithecus lalandii*) from South Africa, presented by Mrs. Hughes; a White-collared Mangabey (*Cercocebus collaris*) from West Africa, presented by Mr. H. Ion; a Chacma Baboon (*Papio porcarius*) from South Africa, presented by Mr. James Adams; a Levaillant's Cynictis (*Cynictis penicillata*) from South Africa, presented by Lady Constance Ryder; a Spotted Ichneumon (*Herpestes nigropunctatus*) from Nepal, presented by Mr. S. D. Pritchard; two Herring Gulls (*Larus argentatus*), European, presented by Mr. F. H. Haines; a Barn Owl (*Strix flammea*), British, presented by Master C. Fox; a — Sheep (*Ovis* sp. inc) from Baluchistan, two Waxwings (*Ampelis garrulus*), European; a Grey Squirrel (*Sciurus cinereus*) from North America, a Brazilian Tortoise (*Testudo tabulata*) from South America, two Ceylonese Terrapins (*Nicoria trijuga*) from India, two Derbyan Sternotheres (*Sternotherus derbianus*) from West Africa, deposited; a Humboldt's Lagothrix (*Lagothrix humboldti*), a Red-faced Ouakari (*Ouacaria rubicunda*) from the Upper Amazons, purchased.

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OUR ASTRONOMICAL COLUMN.

ASTRONOMICAL OCCURRENCES IN FEBRUARY:—

- Feb. 1. 12h. Saturn in conjunction with the sun.
 4. 8h. 41m. Minimum of Algol (β Persei).
 7. 5h. 30m. " " " " " "
 8. 6h. 17m. Transit (ingress) of Jupiter's Sat. IV. (Callisto).
 9. 15h. Ceres in conjunction with moon. Ceres $0^{\circ} 8' N$.
 " 21h. Mercury at greatest elongation. $25^{\circ} 52' W$.
 12. 16h. Venus in conjunction with moon. $4^{\circ} 8' S$.
 14. Venus. Illuminated portion of disc = 0.797.
 24. 5h. 57m. to 7h. 15m. Moon occults α Tauri (Aldebaran, Mag. 1.1).
 25. 17h. Mercury in conjunction with Saturn. Mercury $0^{\circ} 49' S$.
 " 17h. Mars in conjunction with Jupiter. Mars $0^{\circ} 30' N$.
 27. 7h. 13m. Minimum of Algol (β Persei).
 29. 8h. 53m. to 9h. 46m. Moon occults α Leonis (mag. 3.8).

VARIABILITY OF THE MINOR PLANET IRIS.—A telegram from Prof. Pickering, through the Kiel Centralstelle, announces that Prof. Wendell has discovered a periodic variability in the brightness of the minor planet (7) Iris. The period of the changes is six hours, and the range of variability about one-quarter of a magnitude.

HARVARD MERIDIAN PHOTOMETER OBSERVATIONS.—Part i. vol. xlv. of the Harvard College Observatory *Annals* contains the tabulated results of the meridian photometer observations made by Prof. Solon I. Bailey at Arequipa and Cambridge (Mass.) during the years 1899–1902. Chapter i. contains the reduced observations of some 4500 stars situated south of -30° declination made at the southern station during 1899, the stars observed being generally selected from the Argentine General and Cordoba Zone Catalogues.

One of the chapters contains the results of a series of observations made at Cambridge (1900–1902) in order to produce a catalogue of standard stellar magnitudes for regions regularly distributed throughout the sky. To this end the sky was divided into 432 regions, each approximately 10° square, and one star of about the fifth magnitude was photometrically observed in each region, care being taken to select, wherever possible, a star having a first-type spectrum. All the stars were compared with λ Ursæ Minoris and other standard comparison stars, and on reducing the observations it was soon apparent that the results obtained from λ were systematically different from those obtained from the other stars. This difference indicates an increase of two-tenths of a magnitude in the brightness of λ Ursæ Minoris, which may either be due to a personal equation depending on the colour or to a real variation in the star.

LIGHT CHANGES OF ϵ AURIGÆ.—In Nos. 3918, 3919 and 3920 of the *Astronomische Nachrichten* Herr H. Ludendorff publishes the results of an exhaustive research as to the most probable data for the light variation of ϵ Aurigæ.

He first gives and discusses the observational results of Argelander, Heis, Schwab, Plassman, and thirteen other observers, and then, applying suitable weights to the various results, obtains a mean result by the method of least squares. The resulting elements obtained from this analysis are

$$\begin{aligned} T &= 2415476 \text{ days} = \text{April 1, 1901,} \\ t &= 207 \text{ d. } t_m = 313 \text{ d.,} \\ T &= 2415840 = \text{March 31, 1902,} \end{aligned}$$

where T = the epoch at which the light commences to decrease from its normal magnitude, t = the time taken for the complete decrease to minimum or the corresponding increase to maximum, t_m = the duration of the constant minimum, and T_m = the epoch of the mean minimum.

Summarising the results the author finds that the star has a normal magnitude of 3.35, decreases 0.73 mag. in 207 days, remains at constant minimum for 313 days, and then returns to the normal magnitude again in 207 days. After these changes it remains constant for 25.13 years. Thus the complete period for this star becomes 27.12 years, or 9905 days, of which only 1.99 years are occupied by the actual variation.